

REMARKS

Upon entry of the amendments, claims 1, 3-7, and 9-16 will be all the claims pending in the application.

Applicants have amended the third full paragraph at page 6 of the specification in accordance with the description at page 6, lines 1-24 of the specification.

Applicants have also amended the fifth full paragraph at page 6 of the specification in order to correct an obvious translation error. Where the original application is in a non-English language pursuant to 37 C.F.R. § 1.52(d), Applicants may rely on the disclosure of that document to support correction of an error in the pending application (*see*, MPEP §2163.07(II)). In the present case, a French-language specification and claims was filed on April 28, 2000, and Applicants direct the Examiner's attention to page 6, lines 6-8 of that application. Moreover, it is clear that the "treated filler" is filler that has been treated in the manner disclosed at page 6, lines 25-30 of the English-language translation. The "treated filler" is then added to the organic compound (in this case, VLDPE). As amended, the fifth full paragraph at page 6 of the specification is in accordance with the disclosure in its entirety.

Original claims 2 and 8, as well as the description at page 2, lines 6-19 and lines 28-37, and page 5, lines 15-18, supports amended claims 1 and 15.

I. Paragraph Nos. 2-3: Objection to the Abstract of the Disclosure

Applicants have amended the abstract. Accordingly, Applicants respectfully request that the Examiner withdraw this objection.

II. Paragraph No. 4: Objection to the Drawings

The Examiner has objected to the drawings for failing to comply with 37 C.F.R. § 1.84(p)(5). Specifically, the Examiner points out that reference numeral **20** in Fig. 2 is not mentioned in the specification.

Applicants' Response

From the description at page 6, lines 1-24 of the specification, it is clear that Applicants intended for reference numeral **21** to refer to the actual polymer tube that houses the bundle of optical conductors **10**. Reference numeral **20**, on the other hand, was intended to generally refer to a tube comprising optical conductors **10** separated from one another by a filling compound **22** and bundled together inside a polymer tube **21**.

Accordingly, Applicants have amended the third full paragraph at page 6 in order to more clearly reflect their original intention. Applicants respectfully request that the Examiner reconsider and withdraw the objection to the drawings.

III. Paragraph No. 5: Claim Objection

Claims 12-16 are objected to under 37 C.F.R. § 1.75(c) as allegedly being in improper form because a multiple dependent claim cannot depend from another multiple dependent claim (the Examiner refers to MPEP §608.01(n)).

Applicants have amended the dependency of claims 12-16. Accordingly, Applicants respectfully request that the Examiner reconsider and withdraw this objection to the claims.

IV. Paragraph No. 7: Rejection Under 35 U.S.C. § 112

Claim 1 is rejected under 35 U.S.C. § 112, first paragraph, because the specification allegedly fails to provide enablement for the broad terminology of "organic compound" and "inorganic compound."

Applicants' Response

Applicants respectfully traverse. When analyzing the scope of a claim, the teachings of the specification must not be ignored because claims are to be given their broadest reasonable interpretation that is consistent with the specification (emphasis added) (*see*, MPEP §2164.08).

In order to expedite the prosecution, however, Applicants have amended claim 1. Accordingly, Applicants respectfully request that the Examiner reconsider and withdraw this §112 rejection.

V. Paragraph No. 9: Rejection Under 35 U.S.C. § 112

Claims 3-11 are rejected under 35 U.S.C. § 112, second paragraph, as allegedly being indefinite.

Applicants have amended claims 3-7 and 9-11. It is believed that the amended claims fully comply with the second paragraph of §112. Accordingly, withdrawal of this rejection is respectfully requested.

VI. Paragraph No. 11: Rejection Under 35 U.S.C. § 102

Claims 1-3, 8, and 10 are rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by European Patent Publication No. 0 145 213 ("EP '213").

Applicants' Response

Applicants respectfully traverse.

EP '213 discloses a coating composition usable as a protective sheath on a optic fiber cable (*see*, page 2, lines 3-6). This composition may comprise a cross-linked copolymer blend of ethylene methyl acrylate (EMA) together with ethylene ethyl acrylate (EEA), ethylene vinyl acrylate (EVA), ethylene butyl acrylate (EBA), ethylene propylene diene monomer (EPDM) or mixture thereof (*see*, page 2, lines 13-17).

The composition disclosed in EP '213 may further include some additives, such as a filler, which may be a hydrated metal oxide filler (*see*, page 2, line 31). EP '213 discloses that these additives do not significantly affect the fire-retardant or oil-resistant properties of the composition (*see*, page 2, lines 35-36). Typically the filler comprises trihydrated alumina or hydrated magnesium oxide (*see*, page 2, lines 33-34). The constituent materials are

compounded, *e.g.*, in a Banbury mixer or twin screw compounding extruder, up to a temperature of 160 °C and may then be pelletized for subsequent use.

Thus, EP '213 discloses a composition comprising a polymer matrix, which is a cross-linked copolymer blend, including eventually a filler, which may be trihydrated alumina. Mixing a polymer material and an inorganic oxide cannot provide a composite material in the form of particles having a size of nanometer order because the inorganic compound must be treated in order to be capable to insert the organic compound within its layers. EP '213 does not disclose the presently claimed composite material.

For the foregoing reason, Applicants respectfully request that the Examiner reconsider and withdraw this §102 anticipation rejection.

VII. Paragraph No. 12: Rejection Under 35 U.S.C. § 102

Claims 1-5, 8, and 10 are rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by Rinehart, *et al.* (U.S. Patent No. 5,324,588) ("Rinehart").

Applicants' Response

Applicants respectfully traverse.

Rinehart discloses a multi-layer structure that can be used in protecting optical fibers (*see*, column 6, line 48, column 9, line 6, and claim 1). Rinehart's structure comprises an inner layer of PVC and a copolymer, and an outer layer of polyamide. Additives may further be included in the PVC composition, such as inorganic fillers, including clays, calcium carbonates, talc, waxes, wollastonite or silica (*see*, column 4, lines 10-13).

Thus, Rinehart discloses an inner layer of PVC as a matrix, including an inorganic filler. Rinehart does not disclose the presently claimed composite material.

For the foregoing reason, Applicants respectfully request that the Examiner reconsider and withdraw this §102 anticipation rejection.

VIII. Paragraph No. 13: Rejection Under 35 U.S.C. § 102

Claims 1-5 and 8-11 are rejected under 35 U.S.C. § 102(b) or (e) as allegedly being anticipated by Kinaga, *et al.* (U.S. Patent No. 5,182,786) ("Kinaga") or Szum, *et al.* (U.S. Patent No. 6,110,593) ("Szum").

Applicants' Response

Applicants respectfully traverse.

Kinaga discloses a composition capable of forming a coating having a proper slip property on the outer surface of optical fibers (*see*, column 1, lines 9-10). Kinaga's composition comprises a curable substance, a particulate substance having a mean particle size of about 0.2 to 200 μm and, optionally, a photo-polymerization initiator (*see*, column 2, lines 1-8). According to Kinaga, the use of particulate substance having a particle size of less than 0.2 μm imparts a poor slip property (*see*, column 3, lines 49-50). The curable substance is at least one of a resin, a vinyl monomer or an oligomer (*see*, column 2, lines 17-21). Inorganic particulate substances may be particles of talc, mica, clay, metallic oxides, etc. (*see*, column 3, lines 38-40).

Therefore, Kinaga disclose inorganic particulate substance in the form of particles having a particle size of at least 0.2 μm . Because the insertion of the organic compound in the inorganic compound leads to a particle size of nanometer order (Applicants refer to, for example, page 2, line 17 of the present specification), Kinaga cannot and does not disclose the presently claimed composite material.

Szum discloses compositions that include (A) an oligomer system, (B) a monomer system, (C) an optional photoinitiator system, (D) additives and, preferably, (E) a slip-enhancing component (*see*, column 4, lines 12-16). Component (A) may comprise urethane acrylate oligomers (*see*, column 5, line 30), polyethers (*see*, column 6, line 16), polyolefins (*see*, column 6, line 42), and polyesters (*see*, column 6, line 53). Component (B) may be monomers having an acrylate or vinyl ether functionality (*see*, column 7, lines 65-66). Component (D) represents

conventional additives, such as fillers (*see*, column 8, line 58). As the slip enhancing component, Szum discloses the addition of solid lubricants substantially insoluble and non-reactive, the particles of the lubricant being maintained after curing of the composition (*see*, column 27, lines 63-67). Examples of the solid inorganic lubricant include graphite, talc clays and mica (*see*, column 28, lines 6-8).

Thus, Szum discloses compositions including organic systems and, optionally, particles of a solid non-reactive component which remain unchanged after mixture and curing. Szum discloses that no reaction, such as, for example, an insertion, occurs between the organic compound and the inorganic compound. Szum does not disclose the presently claimed composite material.

For each of the foregoing reasons, Applicants respectfully request that the Examiner reconsider and withdraw this §102 rejection.

IX. Paragraph Nos. 14 and 16: Rejections Under 35 U.S.C. §§ 102 and 103

Claims 1-11 are rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by Brauer (U.S. Patent No. 5,672,640).

Claims 6-7 are rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Szum or Kinaga, each in view of Brauer.

Applicants' Response

Applicants respectfully traverse.

Brauer suggests a grease composition for use as a filling material for communications cable and, in particular, optic fiber cable (*see*, column 2, lines 50-52). Brauer's composition contains an oil component, a hydroxy-terminated polymer and colloidal particles, which are present to impart a gel structure to the composition (*see*, column 2, lines 52-60). The colloidal particles may be clay (*see*, column 2, line 62), such as bentonite with or without surface treatment (*see*, column 4, line 42). The grease is extruded into the cable around the fibers (*see*,

column 6, lines 60-62).

Thus, Brauer suggests a grease used as a filling compound.

The present invention relates to a covering layer. In fact, the subject matter suggested by Brauer is completely unrelated to the presently claimed invention.

Brauer relates to a grease composition for a cable filling material (*see*, for example, Brauer's abstract). The cable filling material of Brauer is analogous to, for example, filling compound 32 in present Fig. 3.

The Examiner has taken the position that the present claims are not specific to the structural relationship between the optical fiber and covering layer.

The terms of a claim, however, are not analyzed in a vacuum. The terms of a claim are to be given their broadest reasonable interpretation that is consistent with the specification.

In the present case, the claimed covering material makes up the claimed covering layer of the present cable. When claim 1 is read in light of the specification as a whole, including the drawings, it is clear that the presently claimed covering layer comprising a covering material comprising a composite material is patentably distinct from Brauer's filling compound.

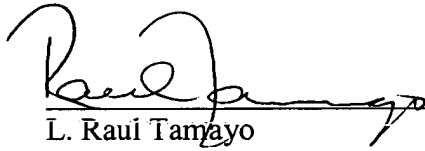
Accordingly, Applicants respectfully request that the Examiner reconsider and withdraw these §102 and §103 rejections.

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X. Conclusion

Reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, she is kindly requested to contact the undersigned at the telephone number listed below.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "L. Raúl Tamayo", written over a horizontal line.

L. Raúl Tamayo
Registration No. 47,125

SUGHRUE MION, PLLC
2100 Pennsylvania Avenue, N.W.
Washington, D.C. 20037-3213
Telephone: (202) 293-7060
Facsimile: (202) 293-7860

Date: March 19, 2002

APPENDIX

VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE SPECIFICATION:

The specification is changed as follows:

Page 6, third full paragraph:

Figure 3 shows an optical fiber cable **30** for a land application, *i.e.* a cable that is designed to be buried. A plurality of tubes **[21]** **20** analogous to the tube **20** shown in Figure 2 are disposed around the periphery of a rod **31** that is often reinforced with glass fibers and that is in contact with a filling compound **32**. The assembly is surrounded by metal armoring **33** covered by a sheath **34** which needs to have good mechanical properties, good fire resistance, and low permeability to water. The sheath **34** is essentially constituted by the covering material of the invention and made as described below.

Page 6, fifth full paragraph:

The treated filler [treated with] is then added to the organic compound [is then added], *i.e.* very low density polyethylene (VLDPE) at a concentration of 5% by weight. The mixture is then blended for 5 min at 160 °C, after which it is extruded or molded around the cable.

IN THE CLAIMS:

Claims 2 and 8 are canceled.

The claims are amended as follows:

1. (Amended) A cable comprising at least one optical fiber and at least one covering layer comprising a covering material comprising a composite material, wherein:

said composite material is in the form of particles, and said particles have a size of nanometer order and [including] include an organic compound and an inorganic compound[,];

[the cable being characterized in that] said inorganic compound (i) is graphite or an

inorganic oxide, (ii) has a layered structure, and (iii) has been treated to allow said organic compound to be inserted between the layers of said inorganic compound[,]; and

[in that] said organic compound is selected from the group consisting of polymers, monomers, and oligomers, and is inserted between the layers of said inorganic compound.

3. (Amended) A cable according to claim [2] 1, in which said inorganic oxide is selected from the group consisting of a metal oxide of layered structure and a silicate of layered structure or "phyllosilicate".

4. (Amended) A cable according to claim 3, in which said silicate of layered structure is selected from the group consisting of mica and clay.

5. (Amended) A cable according to claim 4, in which said clay is selected from the group consisting of talc, vermiculite, kaolinite, smectite, and mixtures thereof.

6. (Amended) A cable according to claim 5, in which said smectite is selected from the group consisting of montmorillonite, bentonite, beidellite, nontronite, saponite, hectorite, and mixtures thereof.

7. (Amended) A cable according to claim [5] 6, in which said [clay] smectite is selected from the group consisting of montmorillonite and bentonite.

9. (Amended) A cable according to claim [8] 1, in which said organic compound is a polymer selected from [:] the group consisting of polyesters, polyethers, polyvinyl ethers, polyurethanes, polyurethane acrylates, maleates, fumarates, polythiols, polyenes, and copolymers and mixtures thereof.

10. (Amended) A cable according to claim [8] 1, in which said organic compound is a

polymer [is] selected from [:] the group consisting of polyolefins, polybutylene-terephthalates, vinyl polymers, elastomers, silicones, and copolymers and mixtures thereof.

11. (Amended) A cable according to claim [8] 1, in which said organic compound is a polymer [is] selected from [:] the group consisting of epoxy resins, polyesters, polyamides, polyimides, polyetherimides, polyamidimides, polyurethanes, silicones, and mixtures thereof.

12. (Amended) A cable according to [any preceding claim] any one of claims 1, 3-7 and 9-11, comprising an optical fiber surrounded by a protective coating including at least one layer constituted essentially by said covering material.

13. (Amended) A cable according to [any preceding claim] any one of claims 1, 3-7 and 9-11, including a plurality of optical fibers and an outer sheath including at least one layer constituted essentially by said covering material.

14. (Amended) A cable according to [any preceding claim] any one of claims 1, 3-7 and 9-11, comprising a bundle of optical fibers and an insulating covering having at least one layer constituted essentially by said covering material.

15. (Amended) A method of manufacturing a cable according to [any preceding claim] any one of claims 1, 3-7 and 9-11, wherein the composite material of said covering material is made by the following steps:

said inorganic compound is in the form of particles having an initial size of micron order, and said inorganic compound particles are treated with an agent so as to ensure that [it] said inorganic compound particles are [is] compatible with said organic compound;

said treated inorganic compound is mixed with said organic compound at a temperature higher than the softening temperature or melting temperature of said organic compound; and

said composite material is obtained, wherein said composite material is in the form of

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particles, said composite material particles have a size of nanometer order, and said composite material particles comprise said organic compound [being] inserted between the layers of said inorganic compound.

16. (Amended) A method according to claim [12] 15, in which said inorganic compound is a clay and said compatibility agent is selected from the group consisting of quaternary ammonium salts, polyethylene oxides, and phosphorous-containing derivatives.

IN THE ABSTRACT OF DISCLOSURE:

The abstract is changed as follows:

[The present invention provides a] A cable [comprising] containing at least one optical fiber and at least one covering layer [comprising] containing a material including an organic compound and an inorganic compound, wherein the [cable being characterized in that said] inorganic compound has a layered structure and [in that said] the organic compound is inserted between the layers of [said] the inorganic compound.